Fact Sheet
October 12, 2011

City of Mishawaka Wastewater Treatment Plant
located at 1020 Lincolnway West, Mishawaka, Indiana, St. Joseph County

Outfall Location	Latitude:	41° 39' 44" N
	Longitude:	86° 11' 40" W

NPDES Permit No. IN0025640

Background

This is the proposed renewal of the NPDES permit for the City of Mishawaka Wastewater Treatment Plant which was issued on September 18, 2006 and has an expiration date of October 31, 2011. The permittee submitted an application for renewal which was received on April 19, 2011. The permittee currently operates a Class IV, 20 MGD conventional activated sludge treatment facility consisting of screening, grit removal, primary clarification, biological nitrification using air activated sludge, phosphorus removal using ferrous chloride, final clarification, chlorination and dechlorination, and cascade post- aeration. Waste activated sludge is thickened using gravity belt thickeners. Primary and waste activated sludge are treated by anaerobic digestion. Anaerobically digested sludge is dewatered by filter belt press. Dewatered biosolids are land applied.

Collection System

The collection system is comprised of 25% combined sanitary and storm sewers with twenty-three (23) Combined Sewer Overflow (CSO) locations. Previously, nineteen (19) CSO locations had been permitted, however, four (4) additional CSO locations have been subsequently identified as Outfalls 022, 023, 023A, and 024.

CSO Statutory or Regulatory Basis for Permit Provisions

CSOs are point sources subject to NPDES permit requirements, including both technology-based and water quality-based requirements of the CWA and state law. Thus the permit contains provisions IDEM deems necessary to meet water quality standards, as well as technology-based treatment requirements, operation and maintenance requirements, and best management practices. This permit is based on various provisions of state and federal law, including (1) Title 13 of the Indiana Code; (2) the water quality standards set forth in 327 IAC 2-1.5; (3) the NPDES rules set forth in 327 IAC 2 and 327 IAC 5, including 327 IAC 5-2-8 and 327 IAC 5-2-10; and (4) section 402(q) of the CWA (33 USC § 1342), which requires all permits or orders issued for discharges from municipal CSOs to conform with the provisions of EPA's National CSO Control Policy (58 Fed. Reg. 18688, April 19, 1994). EPA's CSO Policy contains provisions that,

among other things, require permittees to develop and implement minimum technological and operational controls and long term control plans to meet state water quality standards. The permit's penalty provisions are based in large part on IC 13-30. In addition to the regulatory provisions previously cited, the data collection and reporting requirements are based in part on 327 IAC 5-1-3, 327 IAC 5-2-13 and section 402(q) of the CWA. The long term control plan provisions were included to ensure compliance with water quality standards.

Explanation of Effluent Limitations and Conditions

The effluent limitations set forth in Part I of Attachment A are derived in part from the narrative water quality standards set forth in 327 IAC 2-1.5-8. The narrative standards are minimum standards that apply to all waters at all times, and therefore are applicable to all discharges of pollutants. Because EPA has not issued national effluent limitation guidelines for this category of discharges, the technology-based BAT/BCT provisions are based on best professional judgment (BPJ) in addition to section 402(q) of the CWA. (CSO discharges are not subject to the secondary treatment requirements applicable to publicly owned treatment works because overflow points have been determined to not be part of the treatment plant. Montgomery Environmental Coalition v. Costle, 646 F.2d 568 (D.C. Cir. 1980).)

Spill Reporting Requirements

Reporting requirements associated with the Spill Reporting, Containment, and Response requirements of 327 IAC 2-6.1 are included in Part II.B.2.c. and Part II.C.3. of the NPDES permit. Spills from the permitted facility meeting the definition of a spill under 327 IAC 2-6.1-4(15), the applicability requirements of 327 IAC 2-6.1-1, and the Reportable Spills requirements of 327 IAC 2-6.1-5 (other than those meeting an exclusion under 327 IAC 2-6.1-3 or the criteria outlined below) are subject to the Reporting Responsibilities of 327 IAC 2-6.1-7.

It should be noted that the reporting requirements of 327 IAC 2-6.1 do not apply to those discharges or exceedences that are under the jurisdiction of an applicable permit when the substance in question is covered by the permit and death or acute injury or illness to animals or humans does not occur. In order for a discharge or exceedence to be under the jurisdiction of this NPDES permit, the substance in question (a) must have been discharged in the normal course of operation from an outfall listed in this permit, and (b) must have been discharged from an outfall for which the permittee has authorization to discharge that substance.

Solids Disposal

The permittee is required to dispose of its sludge in accordance with 329 IAC 10, 327 IAC 6.1, or 40 CFR Part 503. The permittee maintains a land application permit (INLA000179) for the disposal of solids.

Receiving Stream

The facility discharges to the St. Joseph River via Outfall 001. The receiving water is located within the Lake Michigan drainage basin. The receiving water has a seven day, ten year low flow ($Q_{7,10}$) of 886 cubic feet per second (573 MGD) at the outfall location. This provides a dilution ratio of receiving stream flow to treated effluent of 29:1.

The receiving stream is designated for full body contact recreational use and shall be capable of supporting a well-balanced warm water aquatic community in accordance with 327 IAC 2-1.5-5. The receiving stream is designated as a salmonid water in 327 IAC 2-1.5-5(3) and shall be capable of supporting a salmonid fishery.

The St. Joseph River is listed on the 2008 303(d) for impairments of *E. coli*, mercury and PCBs. A TMDL for *E. coli* was completed in 2004.

Industrial Contributions

The permittee accepts industrial flow from Spectra, Inc., Power Gear, Patrick Metals, inc., Remote Controls, Inc., Janco Products, Inc., and AM General Corp. Based on the industrial flow received by the treatment facility, the permittee is required to operate its approved industrial pretreatment program approved on May 16, 1985. Provisions for the industrial pretreatment program are included in Part III of this permit renewal. In addition, monitoring requirements for cadmium, chromium, copper, cyanide, lead, nickel and zinc are being included in the permit renewal.

Additional Great Lakes Basin Discharger Requirements

Future Significant Lowering of Water Quality:

As the permittee discharges into a water body which is located in the Great Lakes basin, it is subject to the water quality standards which are specific to the Great Lakes basin dischargers as found in 327 IAC 2-1.5, 327 IAC 5-1.5 and 327 IAC 5-2. These rules, effective as of February 13, 1997, prohibit any action resulting in a significant lowering of water quality unless an antidegradation demonstration has been completed by the applicant and approved by the IDEM.

A significant lowering of water quality, in accordance with 327 IAC 5-2-11.3(b)(1), occurs when there is a new or increased loading of a bioaccumulative chemical of concern (BCC) from the permitted facility; or a new or increased permit limit for a non-BCC where the new or increased permit limits results in both a calculated increase in the ambient concentration of a pollutant in the receiving water body, and a lowering of water quality greater than a de minimis lowering of water quality. If the permittee plans to pursue any increase in design flow by plant expansion during the term of this permit, then an antidegradation study would be necessary.

As required by 327 IAC 5-2-11.3(b)(2), the permit renewal (Part II.A.17) specifically prohibits the permittee from taking deliberate actions that would result in new or increased discharges of BCCs or new or increased permit limits for non-BCCs without first proving that the new or increased discharge would not result in a significant lowering of water quality, or by submission and approval of an antidegradation demonstration to the IDEM.

Effluent Limitations and Rationale

The effluent limitations proposed herein are based on Indiana Water Quality Standards, NPDES regulations, and Wasteload Allocation (WLA) analyses performed by this Office's Permits Branch staff on July 9, 2003, July 21, 2011 and September 28, 2011. These limits are in accordance with antibacksliding regulations specified in 327 IAC 5-2-10(11)(A). Monitoring frequencies are based upon facility size and type.

The final effluent limitations to be limited and/or monitored include: Flow, Carbonaceous Biochemical Oxygen Demand ($CBOD_5$), Total Suspended Solids (TSS), Ammonia-nitrogen (NH_3-N), Phosphorus, pH, Total Residual Chlorine (TRC), *Escherichia coli* (*E. coli)*, cadmium, chromium, copper, cyanide, lead, mercury, nickel and zinc.

Dissolved Oxygen (DO) limitations have not been included in the permit due to the high dilution afforded by the receiving stream.

Final Effluent Limitations

The summer monitoring period runs from May 1 through November 30 of each year and the winter monitoring period runs from December 1 through April 30 of each year. The disinfection season runs from April 1 through October 31 of each year.

Mass Loading Limitations

Ordinarily water quality-based effluent limitations (WQBELs) for facilities in the GLI area must be calculated in accordance with the provisions of 327 IAC 5-2-11.4(a)(9) which would require that the alternate effluent flow value be used in the wasteload allocation study for determining both the concentration and mass limits. Additionally 327 IAC 5-2-11.6(g) requires that the WQBELS be expressed as both a concentration value and a corresponding mass loading rate.

In reviewing Indiana statutes, IDEM has determined that statute cite IC 13-18-19-2(a)(2) overrides these rule provisions. It gives IDEM the authority to provide increased mass limitations for POTWs that:

(1) are capable of treating wastewater flows that exceed the design flow used to calculate normal WQBELs, and

(2) as a result of the increased limitations, can reduce the volume of discharge of wastewater from plant bypasses or combined sewer overflows.

The federal GLI rules required the Great Lake states to adopt water quality criteria and implementation procedures consistent with 40 CFR 132.4. (See in particular 40 CFR 132.4(a)(7) and (e)). Note that 40 CFR 132.4(e)(2) gives states *some* flexibility in the adoption of the implementation procedures, it was limited to only those pollutants specifically listed in Table 5 of 40 CFR 132.4. Thus, for all other pollutants, which are not listed in Table 5 of 50 CFR 132.4, IDEM is required to adhere to 327 IAC 5-2-11.4(a)(9) and 327 IAC 5-2-11.6(g).

Therefore, the mass limitations for the conventional parameters were derived by multiplying the facility's peak design flow rate of 42.0 MGD X the corresponding concentration limitation X 8.345, while the mass limitations for mercury were derived by multiplying the facility's average design flow of 20.0 MGD X the corresponding concentration limit X 8.345.

Flow

Flow is to be measured daily as a 24-hour total. Reporting of flow is required by 327 IAC 5-2-13.

$CBOD_5$

$CBOD_5$ is limited to 25 mg/l (8,762 lbs/day) as a monthly average and 40 mg/l (14,020 lbs/day) as a weekly average.

Monitoring is to be conducted daily by 24-hour composite sampling. The $CBOD_5$ concentration limitations included in this permit are set in accordance with the Wasteload Allocation (WLA) analysis performed by this Office's Permits Branch staff on July 9, 2003 and are the same as the concentration limitations found in the facility's previous permit.

TSS

TSS is limited to 30 mg/l (10,515 lbs/day) as a monthly average and 45 mg/l (15,772 lbs/day) as a weekly average.

Monitoring is to be conducted daily by 24-hour composite sampling. The TSS concentration limitations included in this permit are set in accordance with the Wasteload Allocation (WLA) analysis performed by this Office's Permits Branch staff on July 9, 2003 and are the same as the concentration limitations found in the facility's previous permit.

Ammonia-nitrogen

Ammonia-nitrogen is limited to 5.0 mg/l (1,752 lbs/day) as a monthly average and 13.1 mg/l (4,591 lbs/day) as a daily maximum during the summer monitoring period. During the winter monitoring period, ammonia-nitrogen is limited to 5.8 mg/l (2,033 lbs/day) as a monthly average and 13.5 mg/l (4,732 lbs/day) as a daily maximum.

Monitoring is to be conducted daily by 24-hour composite sampling. The ammonia-nitrogen concentration limitations included in this permit are set in accordance with the Wasteload Allocation (WLA) analysis performed by this Office's Permits Branch staff on July 9, 2003 and are the same as the concentration limitations found in the facility's previous permit.

Phosphorus

In accordance with 327 IAC 5-10-2(a) & (b), as the treatment facility discharges into receiving waters located within the Lake Michigan drainage basins, phosphorus removal facilities shall achieve a degree of reduction as prescribed in the sliding scale of phosphorus removal in Footnote [2] of the permit, or produce an effluent containing no more than 1.0 mg/l total phosphorus (P), whichever is more stringent. Monitoring is to be conducted daily by 24-hour composite sampling. These phosphorus limitations are the same as the limitations found in the facility's previous permit.

pH

The pH limitations have been based on 40 CFR 133.102 which is cross-referenced in 327 IAC 5-5-3. To ensure conditions necessary for the maintenance of a well-balanced aquatic community, the pH of the final effluent must be between 6.0 and 9.0 standard units in accordance with provisions in 327 IAC 2-1.5-8(c)(2). pH must be measured daily by grab sampling. These pH limitations are the same as the limitations found in the facility's previous permit.

Total Residual Chlorine

In accordance with Indiana Water Quality Standards, the final effluent limits (end-of-pipe) for TRC are 0.02 mg/l (7.0 lbs/day) monthly average and 0.04 mg/l daily maximum (14.0 lbs/day).The monthly average Water Quality-Based Effluent Limit (WQBEL) for total residual chlorine is less than the limit of quantitation (LOQ), 0.06 mg/l. Compliance with this permit will be demonstrated if the monthly average effluent level is less than or equal to the monthly average WQBEL. Daily effluent values that are less than the LOQ, used to determine the monthly average effluent levels less than the LOQ, may be assigned a value of zero (0), unless, after considering the number of monitoring results that are greater than the limit of detection (LOD), and applying appropriate statistical techniques, a value other than zero (0) is warranted.

The daily maximum WQBEL for total residual chlorine is greater than or equal to the LOD value, but less than the LOQ value specified in the permit. Compliance with this permit will be demonstrated if the observed daily effluent concentrations are less than the LOQ. For daily maximum mass limitations based on WQBEL's less than the LOQ, compliance with the daily maximum mass value is based on the LOQ value. Compliance with the daily maximum mass value will be demonstrated if the calculated mass value is less than 21.0 lbs/day. These total residual chlorine limitations are the same as the limitations found in the facility's previous permit.

E. coli

The effluent shall be disinfected on a continuous basis year-round such that violations of the applicable bacteriological limitations (*E. coli*) do not occur at any time. *E. coli* is limited to 235 count/100 mls as a daily maximum and 125 count/100 mls as a monthly average from April 1 through October 31. The monthly average *E. coli* values shall be calculated as a geometric mean. *E. coli* shall be monitored and reported November 1 through March 31. *E. coli* must be measured daily by grab sample. These *E. coli* limitations are in accordance with 327 IAC 2-1.5-8(e)(2) as referenced in 327 IAC 5-2-11.4(d)(2) and 327 IAC 5-10-6.

Mercury

The Reasonable Potential Evaluation (RPE) performed by this Office's Permits Branch staff on July 21, 2011 revealed that the projected effluent quality (PEQ) for mercury was greater than the projected effluent limitations (PELs). Therefore, effluent limitations for mercury are being included in this permit. Mercury is limited to 1.3 ng/l (0.0002 lbs/day) as a monthly average and 3.2 ng/l (0.0005 lbs/day) as a daily maximum. This monitoring is to be conducted six (6) times annually by grab sampling. The mercury WQBELs are based on the wildlife criterion in 327 IAC 2-1.5-8(b)(6), Table 8-4. In accordance with 327 IAC 5-2-11.4(b)(1) the criteria for mercury are applied without the utilization of a mixing zone. As mercury effluent limitations are a new requirement, a 36-month schedule of compliance has been included in Part I.D. of the permit. The permittee will utilize the three year timeframe to implement the pollution control measures which the permittee expects will result in compliance with mercury limitations. The permittee is required to monitor for mercury during the interim period as noted in Table 4 and Table 5 of the permit.

Metals/Non-conventional Pollutants

RPEs for cadmium, chromium, copper, lead, nickel and zinc were performed in conjunction with the Wasteload Allocation Analysis (WLA) performed by this Office's Permits Branch staff on July 21, 2011. In reviewing the RPE, the projected effluent quality (PEQ) for cadmium, chromium, copper, lead, nickel and zinc is less than the projected effluent limitations (PEL). Therefore, effluent limitations have not been included for the aforementioned metals. However, due to the industrial contributors to the City of Mishawaka

collection system, monitoring requirements for these metals are being retained, at a reduced frequency of quarterly, on the influent and effluent.

The WLA performed by this Office's Permits Branch staff on July 21, 2011indicated a RPE for free cyanide. The City resubmitted effluent data for free cyanide as previously submitted data contained errors. A RPE for free cyanide utilizing the corrected data was performed by this Office's Permits Branch staff on September 28, 2011. In reviewing the RPE, the projected effluent quality (PEQ) for free cyanide is less than the projected effluent limitations (PEL). Therefore, effluent limitations have not been included for free cyanide. However, due to the industrial contributors to the City of Mishawaka collection system, monitoring requirements for free cyanide is being retained, at a reduced frequency of quarterly, on the influent and effluent.

Whole Effluent Toxicity Testing

The permittee submitted a Whole Effluent Toxicity Tests (WETT) with the renewal application as required in 327 IAC 5-2-3(g). No toxicity was exhibited.

Indiana's regulations for the Great Lakes system include narrative criteria with numeric interpretations for acute (2-1.5-8(b)(1)(E)(ii)) and chronic (2-1.5-8(b)(2)(A)(iv)) whole effluent toxicity (WET) and a procedure for conducting reasonable potential for WET (5-2-11.5(c)(1)). The U.S. EPA did not approve the reasonable potential procedure for WET so Indiana is now required under 40 CFR Part 132.6(c) to use the reasonable potential procedure in Paragraphs C.1 and D of Procedure 6 in Appendix F of 40 CFR Part 132. IDEM used this procedure in conducting the reasonable potential analysis for WET. The analysis is included in the Wasteload Allocation Analysis conducted by this Office's Permits Branch staff on July 21, 2011.

The results of the reasonable potential analysis for WET show that the discharge from Outfall 001 does not have the reasonable potential to exceed the numeric interpretation of the narrative criteria for acute or chronic WET.

The permittee shall conduct the whole effluent toxicity tests described in Part I.E. of the permit to monitor the toxicity of the discharge from Outfall 001. This toxicity testing is to be performed biannually for the duration of this NPDES permit. Acute toxicity will be demonstrated if the effluent is observed to have exceeded 1.0 TU_a(acute toxic units) based on 100% effluent for the test organism in 48 and 96 hours for *Ceriodaphnia dubia* or *Pimephales promelas*, which ever is more sensitive. Chronic toxicity will be demonstrated if the effluent is observed to have exceeded 8.0 TU_c (chronic toxic units) for *Ceriodaphnia dubia* or *Pimephales promelas*. If acute or chronic toxicity is found in any of the tests specified above, another toxicity test using the specified methodology and same test species shall be conducted within two weeks. If any two tests indicate the presence of toxicity, the permittee must begin the implementation of a toxicity reduction evaluation (TRE) as is described in Part I.E.2. of the permit.

Backsliding

None of the concentration limits included in this permit conflict with antibacksliding regulations found in 327 IAC 5-2-10(11)(A), therefore, backsliding is not an issue.

Reopening Clauses

Seven (7) reopening clauses were incorporated into the permit in Part I.C. One clause is to incorporate effluent limits from any further wasteload allocations performed, a second clause is to allow for changes in the sludge disposal standards, a third clause is to incorporate any applicable effluent limitation or standard issued or approved under section 301(b)(2)(C), (D) and (E), 304(b)(2), and 307(a)(2) of the Clean Water Act, a fourth clause is to incorporate monitoring requirements and effluent limitations for cadmium, chromium, copper, free cyanide, lead, nickel and zinc, a fifth clause is to include whole effluent toxicity limitations or to include limitations for specific toxicant, a sixth clause is to include a case-specific Method Detection Level (MDL), and seventh clause is to modify the permit if a variance for mercury is granted.

Compliance Status

The permittee has no enforcement actions at the time of this permit preparation.

Expiration Date

A five-year NPDES permit is proposed.

Drafted by: Leigh Voss
10/12/11